The Bulletproof Canopy

By Lt. Nathan Barton

A wise hinge (aka lieutenant commander) once told me, "Every once in a while in naval aviation, something crazy happens that you totally didn't expect, and the excitement those situations bring is what makes this job what it is."

"Preach it, brother," I thought, as I slammed the throttles to idle with the speed brakes extended and watched pieces of shredded metal and nylon rain down on our jet. I felt like I was standing naked in a Kansas hailstorm, as I unsuccessfully flailed to avoid the countless shards of metal that were zipping down our intakes and piercing our jet.

It was the first week of COMPTUEX, and like most other Prowler nuggets, I started focusing on the dreaded night trap as soon as I set foot on USS *Nimitz's* flight deck. According to the brief for LFS-1 (large force strike No. 1), my crew and I were to launch at 1100. We were to proceed directly to the Isabella tanker-track in the vicinity of the China Lake Ranges and take some fuel from Primo-82, an Air Force KC-10. After in-flight refueling, we would complete our mission, take another quick drink from the tanker, and proceed back to *Nimitz*. I then would make my best attempt at hurling my Grumman beast over the 1-wire but not past the 4-wire. That was the plan.

We were first to launch and first to arrive at the tanker. They immediately cleared us to "precontact." My ECMO-1, a second tour department head, who had more traps than I had hours, read through the in-flight-refueling checklist one last time. While in precontact, Primo-82 told us to standby while they retracted the refueling hose to troubleshoot. Two minutes later, the hose extended, and we were "cleared contact," with three knots maximum closure.

We had a beautiful sunny day, not a cloud in the sky, and nothing but smooth air. I only had tanked a handful of times since the fleet-replacement squadron (FRS), but I quickly had learned the KC-10 was the tanker of choice for any naval aviator because of its forgiving hose and large soft basket.

"This is beautiful, dude," my right-seater said just before my probe contacted the basket. Immediately upon contact, the basket seemed to explode. The neatly woven nylon and metal tubing instantly unraveled. Simultaneously, a sine wave rapidly traveled up the hose and rippled right back down.

As soon as I saw the basket begin to come apart, I immediately went to idle and squeezed the speed-brake switch as hard as I could, as if to make them come out faster than normal. Pieces of debris showered the air. As the sine wave reached the end of the hose, the remains of the refueling basket detached from it. The solid metal valve, which spewed fuel all over our aircraft at 50 psi, still was attached to the end of the hose. It began to violently whip up and down, beating relentlessly on the canopy and nose of the aircraft. Were we not in a jet that had an extremely thick, bulletproof canopy, the basket surely would have sliced through the glass, clearing out anything in its way.

The boom operator screamed over the radio, "Emergency disconnect! Emergency disconnect!" I could

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hear the fear in his voice, and it was obvious he had no control of his refueling system.

It took less than one second from contact to disengagement, but it felt like minutes had passed. As we slowed and descended, ECMO-2 said we were clear to the right side of the jet. I glanced at the engine instruments and was pleasantly surprised to see they both indicated normal, despite the meal of metal they just had ingested. As I tried to extract the seat-cushion from my colon, I cleared to the starboard side of Primo-82.

ECMO-1 pulled out his pocket checklist (PCL), flipped to the damaged-aircraft section, and told the two back-seaters to tighten down their lap belts. He also said to make sure their masks were on with visors down, because there was a chance we were going to eject. Our engine instruments indicated normal. However, the basket still was hanging from our mangled refueling probe. It was obvious to both of us in the front seat that our canopy had been damaged badly. Also, with the basket attached to our probe by a mere piece of nylon, we were certain that when the nylon gave way, the basket would be sucked down the starboard intake or come through the canopy.

We quickly pointed NH500 toward NAS China Lake and talked about the best way to land. If we made an arrested landing, the basket might fling off the end of the probe and get sucked down the intake. If we made a normal landing and the basket broke free on touchdown, several things might occur, and all with dire endings. The best idea we had was to take a trap and shut down the motors in the wires. One of the back-seaters was a Naval Test Pilot School graduate—he was intimately familiar with the airspace, specifically around NAS China Lake.

Despite the winds, we landed on the runway with short-field arresting gear, as recommended by the back-seater. The trap was uneventful, and the basket never left the probe. The field actually was closed, and no maintenance crews were at work. So, with the help of the emergency crew, we chocked our battered jet in the wires and walked away unscathed.

Our EA-6B suffered irreparable FOD damage to our starboard engine from the ingested metal. Our refueling probe severely was mangled and required replacement. The nose radome suffered damage from the whipping hose and valve, and the carbon-fiber cover that protects the receivers in the vertical stabilizer had a hole through it. Fortunately, the canopy could be repaired. The KC-10 was forced to jettison the remains of their hose onto the desert floor, requiring replacement of the refueling hose and basket.

The investigation showed the refueling drogue had a catastrophic failure of the MA-4 coupler upon contact with the refueling probe. This contact caused the basket to detach from the refueling hose. The hose-reel-retract system, which they were troubleshooting when we arrived, wasn't working and caused the abnormal sine wave. The final cost of parts and man-hours topped $300,000. This was but a small price to pay in comparison to what could have happened had that small piece of nylon not held up in 280 knots of wind for the 30-mile divert to China Lake.

That night, while watching the sunset over China Lake and thanking God that our crew and our jet were safe on deck, I thought again about what the hinge had told me. I had experienced something crazy and exciting, didn't expect it, and now know what makes this job what it is. He couldn't have been more right. I didn't get the night trap that evening, but the exhilaration that took its place made an impact that I won't soon forget.

Lt. Barton flies with VAQ-135.